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Changes in Endogenous Hormone Contents and Carbohydrates During Dormancy Status According to the Different Sized Seed Potatoes in ‘Daeji’

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[Introduction]

In South Korea, potatoes can be grown twice a year. Spring potatoes start with planting the seed tubers in March, and end with harvesting in June. Fall cropping used the seed tuber produced by spring cropping system. This requires not only the potato cultivars with short dormant periods (40–60 days) such as ‘Daeji’, ‘Eunsun’, and optimal size of seed tuber with early dormancy release.

[Materials and Methods]

The potatoes used in this study were produced by spring cropping system at Gangneung. 10–20 g, 30–40 g, 50–60 g potatoes were used to investigate the dormancy characteristics. The tubers used in these studies were stored in the dark at 20°C during 56 days. Tuber dormancy was determined visually after 14 days and considered sprouted if it had any sprouts ≥ 2 mm in length. At the indicated times, pith and periderm were excised from each tuber, weighed, frozen and stored at -80°C to analyze change in endogenous hormone(ABA, GA) and starch contents.

[Results and Discussion]

The larger seed tubers sprouted significantly earlier than smaller ones. Regardless of the tuber size, the decline of ABA content and increase of GA were evident during storage. However, there was no correlation between final ABA and GA content of the different sized tuber and dormant release. Total starch declined regardless of the tuber size. 30–40 g tuber showed decrease of starch content by 23.9%, followed by 50–60 g as 19.6%, whereas the smallest tuber, 10–20 g, showed only 5.2% decreased.

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